PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

SERIES C. JOURNAL OF MEETINGS

VOLUME 23 No. 5, 1958

ORDINARY MEETING

WEDNESDAY, 2nd JULY, 1958, at 5.30 p.m.

AGENDA

1. Proceedings of the Ordinary Meeting held on 4th June, 1958.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 24].
6. Admission of Fellows.
7. Exhibits.
8. Communications.

Dr. D. J. Lewis

Some man-biting species of *Simulium*

[ABSTRACT]

Some aspects of the biology of Simuliidae in various countries will be discussed, and some recent studies on *Simulium damnosum* Theobald, an important vector of human onchocerciasis in Africa, will be described. Particular attention will be paid to the structure of the adult, visible changes in individual flies, unusual breeding places, differences between nulliparous and parous flies, the biting cycle, aestivation, the number of infective *Onchocerca* per fly, and methods of study. Nulliparous and parous flies behave differently from each other in various ways and are easily recognised during dissection, and parous flies are likely to include all those with infective forms of *Onchocerca*. It is convenient, and instructive, to regard these two groups of flies as distinct components of the population and to plan investigations accordingly.

TEA will be served in the Library before the meeting.

NOTICES

XIth International Congress of Entomology

The XIth International Congress of Entomology will be held in Vienna from 17th–25th August, 1960. Fellows who have not yet received the preliminary circular are asked to get in touch with the Secretary of the Congress, Dr. Max Beier, Naturhistorisches Museum, Burgring 7, Vienna 1.

Committee for Biological Acoustics

The Committee for Biological Acoustics, the members of which are Professor R. J. Pumphrey (*Chairman*), Dr. P. T. Haskell (*Secretary*) and Drs. Thorpe, Pringle, Harrison-Matthews, Fraser, Cherry, Ragge, Marshall and Leston, has recently been formed to assist research in all fields of human and animal acoustics. It proposes to hold joint meetings with established scientific societies and is examining the practicability of forming a British library of recorded animal sounds. It also intends to publish a list of all workers in biological acoustics. Fellows interested in insect sounds are asked to write to the Secretary of the Committee.

Forthcoming Ordinary Meetings

1*st October*, 1958

Dr. J. Smart.—Collecting in New Guinea.

5*th November*, 1958

(1) **Mr. C. A. Collingwood.**—The distribution of *Formica* spp. in Britain in relation to climate.

(2) **Dr. J. P. Dempster.**—A study of the predators of the broom beetle (*Phytodecta olivacea* Forster), using the precipitin test.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 4TH JUNE, 1958.

PROFESSOR O. W. RICHARDS, President, in the Chair.

Present 59 Fellows and 13 Visitors.

The minutes of the Ordinary Meeting held on 7th May, 1958, were confirmed and signed by the President.

The names of the following candidates for election were read for the first time: Mr. Andrew Lewis Baldwin; Mr. Leonard Norris Baxter; Mr. Ronald Norris Baxter; Mr. Horace Gaskell Denvil; and Dr. Morris Netterville Watt, M.B., Ch.B.

For the second time (taken as read): Mr. Jack Goldsmith, B.Sc.; Mr. Amos Henry Henson; Mr. John Antony Cecil Howard, B.Sc.; Mr. Mohammad Rashid Khan; Mr. Muhammad Allahdad Khan; Major Duraiswamy Aiyar Narasimhan, A.M.C., B.Sc., M.B., B.S.; Mr. Ronald James Martin Skarratt; and Mr. Kenneth McCulloch Thomson.

The Secretary read the names of the following newly elected Fellows of the Society: Mr. John Albert Sydney Brasier, N.D.A., 19A Hughenden Road, Hastings, Sussex; Mr. John Hugh Brettell, Rhodes University, Grahamstown, South Africa; Mr. Michael Gane, c/o Forest Department, Morogoro, Tanganyika; Mrs. Gouri Ganguly, M.Sc., The University, Bristol, 8; Mr. Ronald William Hodges, B.S., M.Sc., Cornell University, Ithaca, New York, U.S.A.; Mr. Patrick Elliott Hulley, Rhodes University, Grahamstown, South Africa; Dr. Vladimír Landa, Institute of Entomology, Viničná 7, Praha 2, Czechoslovakia; Mr. Nitai Majumder, B.Sc., Indian Lac Research Institute, Namkum, Ranchi, Bihar, India; Mr. Sankaranarayanan Sundararaman, B.Sc., M.Sc., World Health Organisation, 2 Halpin Road, Rangoon, Burma; and Mr. Richard Thomas Thompson, British Museum (Natural History), Cromwell Road, London, S.W.7.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. R. T. Thompson signed the Obligation Book and was admitted a Fellow of the Society.

Dr. P. T. Haskell made an announcement regarding the newly established Committee for Biological Acoustics. [See above.]

The Hon. Miriam Rothschild exhibited two of some seven or eight specimens of the Garden Tiger Moth (*Arctia caja* L.) taken in an M.V. trap during one night in 1957, all of which had an abnormal amount of white on the forewings and, in fact, greatly resembled the well-known recessive variety *decrescens*. From a pairing of the two specimens exhibited several hundred eggs were obtained, 250 of which were reared and hatched; all were completely normal specimens. A sample of these was also exhibited. As the possibility existed that the white-winged female which laid the eggs had been mated to a normal male before getting into the trap, the F_1 generation were paired, but again all the specimens reared and hatched were completely normal. Miss Rothschild said she could only suggest that the specimens which came into the trap were all from one brood and probably phenocopies—all having been exposed during development to some unusual condition which produced the varieties. Dr. H. B. D. Kettlewell favoured the explanation that the variety was a genetical one but only expressed under unusual conditions—conditions not repeated in the breeding cages.

In reply to an enquiry by Mr. P. F. Mattingly, Miss Rothschild said she did not think anyone in this country had succeeded in producing phenocopies. Mr. Mattingly having observed that it was a pity these experiments were not persevered with, the President said it was difficult to know where and how to start. Although a lot of work was done on heat treatment at the turn of the century, the great advances in genetics in recent years called for a completely new approach.

Mr. W. O. Haufe (a visitor) showed and commented on two films produced by Science Service, Department of Agriculture, Ottawa, and kindly made available by that organisation. Abstracts of the films were printed on pages 15 and 16.

In the discussion following the film on the biting flies of Northern Canada Mr. Haufe said, in reply to an enquiry by Mr. P. N. Lawrence, that no repellent was guaranteed to give complete protection under the conditions shown in the film; black flies had been known to bite humans through a pool of repellent.

Dr. D. J. Lewis having commented on the fact that *Simulium* was not a pest in S.W. Canada, Mr. Haufe said the reason for this was not known—possibly the streams were too turbulent for breeding; a certain range of current was critical for development of the larvae.

Professor D. S. Bertram referred to the different reaction responses he had encountered in his experiments with insecticides and asked whether in Mr. Haufe's experiments actual contact was necessary or whether the vapour gave protection. Mr. Haufe replied that generally speaking the vapour envelope was a protection but " determined " insects would penetrate the barrier.

Mr. H. Oldroyd asked from what sources other than human the *Simulium* species obtained their blood. Mr. Haufe replied that serological data showed a great variety of hosts. In Northern Canada they feed on almost every mammal and bird; the Tabanidae, however, tended to concentrate on the larger mammals.

Mr. G. S. Kloet suggested that the low temperature of the northern mountain streams might account for the scarcity of *Simulium* but Mr. Haufe did not think this could be so—different species were associated with different reaches of the streams and some occurred throughout at different seasons.

Dr. Haskell called attention to Mr. Haufe's reference to immunity acquired by field workers after continued biting and asked whether this was specific and what progress had been made with the production of injections. Mr. Haufe replied that immunity was markedly specific; work on injections was going on but he was not at present in touch with details of its progress.

Mr. W. H. Potts asked if the traps caught species which did not bite man and whether experiments indicated any preferences or whether all species were omnivorous. Mr. Haufe replied that nearly all were omnivorous and he only recalled one mosquito (*Culex apicalis*), a frog-biting species, which did not appear in mechanical or bait traps. Possibly it was very sedentary.

Dr. R. L. Usinger said that in the Western part of the United States there were many species of Black Fly with different host preferences. In California and Oregon they do not bite man but prefer rodents. It might well be found that most species of Black Fly do not feed on man.

Dr. Lewis said that in remote areas Simuliidae would have difficulty in obtaining a blood meal and instanced that in Africa some adult females had undeveloped ovaries and no fat-body, and had apparently failed to find a blood meal but lived for some time on plant juices. Mr. Haufe added that some species in Northern Canada did not require a blood meal.

Mr. Haufe said, in reply to an enquiry by Mr. Leston, that no cases of anaphylactic shock had been met in injection experiments.

In the discussion following the second film on the pollination of alfalfa in Canada Mr. C. N. Hawkins asked whether pollinators could be reared artificially in sufficient numbers to be effective if released in suitable areas. Mr. Haufe replied that the implementing of this scheme was recognised as a major problem in the field ; it had not proved possible so far.

Mr. E. B. Britton mentioned that in the United States it was the practice to move hives of honey bees into the neighbourhood of alfalfa fields and to renew them frequently so as to provide a continuous supply of inexperienced bees. Mr. Haufe said that this had not proved practicable in Canada owing to the large tracts involved. Dr. Usinger continued that this practice was now less popular in the United States and had been superseded by a new approach. In Utah the " alkali bee " (*Nomia* sp.) was known to be one of the best pollinators and attempts were now being made to introduce it and others into California.

The President observed that a world-wide economic problem was here involved, centring round the conflict between large-scale 100-acre continuous farming and smaller community farms with abundant waste land margins where pollinators could breed.

Mr. Haufe said that present policy was to recognise the importance of the community aspect, with emphasis on a diversified production that exploited adapted indigenous species of beneficial insects.

In concluding the meeting the President expressed the Society's thanks to Mr. Haufe for providing the opportunity for Fellows to see these interesting films.

PAUL FREEMAN, *Honorary Secretary.*

ADDITIONS TO THE LIBRARY.

Presented.

Boorman, J. *&* Roche, P. *The Nigerian butterflies.* 1. *Papilionidae.* 8vo. Ibadan : Univ. Pr., 1957. [The Librarian, University College, Ibadan.]

Freeman, T. N. The Archipinae of North America (Lep. : Tortricidae). *Canad. Ent. Supplt.* **7** : 1–89, 1958. [By exchange.]

Thresh, J. M. The control of cacao swollen shoot disease in West Africa. *Tech. Bull. W. Afr. Cocoa Res. Inst.* **4** : 1–36, 1958. [The Institute.]

Purchased.

Bonnet, P. *Bibliographia Araneorum.* Tome II (4me partie N-S). 8vo. Toulouse, 1958.

Borradaile, L. A., *&* Potts, F. A. *The invertebrata : a manual for the use of students.* (1932) 3rd ed. 8vo. Cambridge : Univ. Pr., 1958.

Cavro, E. *Catalogue des Hymenoptères du Dept. du Nord et des pays limitrophes* III. *Térébrants.* 8vo. Paris, 1954.

Fauna Hungariae. 8vo. Budapest : Akad. Kiado, 1955.
1. Diptera II. Muscidae pupiparae : A. Soós, 1955.
2. Diptera I. Culicidae : F. Mihályi, 1955.
3. Coleoptera III. Malacodermata : Z. Kaszab, 1955.
8. Hymenoptera II. Chalcidoidea I : J. Erdős, 1955.
9. Hymenoptera III. Scolioidea : E. Bajári, 1956.
10. Coleoptera V. Strepsiptera : J. Györffy, 1956.
11. Hymenoptera III. Pompiloidea : L. Móczár, 1956.
12. Coleoptera IV. Lamellicornia : S. Endrődi, 1956.
13. Lepidoptera : Microlepidoptera II : L. Gozmany, 1956.
15. Coleoptera IV. Heteromera III : Z. Kaszab, 1956.
17. Coleoptera IV. Heteromera I : Z. Kaszab, 1957.
18. Odonata : S. Ujhelyi, 1957.
19. Hymenoptera III. Apidae : M. Móczár, 1957.
20. Hymenoptera III. Sphecoidea I : E. Bajári, 1957.
34. Coleoptera I. Cicindelidae : V. Székessy, 1958.
35. Hymenoptera III. Megachilidae : M. Móczár, 1958.
37. Diptera I. Tabanidae : M. P. Aradi, 1958.
38. Coleoptera V. Strepsiptera : Attelabidae : S. Endrődi, 1958.

Genera Insectorum de P. Wytsman. Fasc. 199B. *Coleoptera Lamellicornia*· Fam. *Scarabaeidae* II. Von. J. W. Machatschke. 4to. Anvers, 1957.

Guide to the insects of Connecticut. VI. *Diptera.* Fasc. 2. *Culicidae.* By R. Matheson, 1945. Fasc. 3. *Asilidae.* By S. W. Bromley, 1946. Fasc. 4. *Tabanidae.* By G. B. Fairchild. *Phoridae.* By C. T. Brues. 8vo. Hartford, Conn. [*Bull. Conn. geol. nat. Hist. Surv.* **68**, **69**, **75**.]

Henderson, I. F., & W. D. *A dictionary of scientific terms.* 6th ed. 8vo. Edinburgh : Oliver & Boyd, 1957.

Hill, J. *A general history of the animals, vegetables and minerals of the World.* Vol. 3. *Animals.* Fol. London, 1752.

Klots, A. B. *Vie et moeurs des papillons.* 4to. Paris : Horizons de France, 1957.

Lemée, A. *Contribution à l étude des Lépidoptères du Haut Tonkin* (*N. Vietnam*) *et de Saigon.* 8vo. Paris, 1950.

Lewin, W. *The insects of Great Britain.* Pt. 1. 8vo. London, 1795.

Lindroth, C. H. *The faunal connections between Europe and North America.* 8vo. Stockholm : Almqvist & Wiksell, 1957.

Möhn, E. *Beitrage sur Systematik der Larven der Itonididae* (*Diptera*) Teil. 1. 4to. Stuttgart : Schweizerbart'sche, 1955. [*Zoologia* Bd. **38** (1) Hft. 105. Lief. 1–2.]

Mueller, A. H. *Lehrbuch der paläozoologie.* Bd. 1. *Allgemeine Grundlagen.* 8vo. Jena : Gustav Fischer, 1957.

Natural history of insects, compiled from Swammerdam, Brookes, etc. 1st issue. 8vo. London, 1792.

Russell, *Sir* E. J. *The World of the soil.* 8vo. London : Collins, 1957. [*The New Naturalist.*]

Portevin, G. *Ce qu'il faut savoir des abeilles. La pratique du rucher.* 8vo. Paris, 1947.

South, R. *Butterflies of the British Isles.* (1906) New ed. 8vo. London : Warne, 1947.

Stichel, W. *Illustrierte Bestimmungstabellen der Wanzen.* II. *Europa.* (*Hemiptera Heteroptera Europae*) Hft. 23–24. 8vo. Berlin-Hermsdorf, 1958.

Svensk Insektfauna. 8vo. Stockholm.
43. *Microlepidoptera.* Fam. 4–5. *Micropterygina och Tineides aculeatae.* Av P. Benander, 1953.
44–45. *Diptera Schizophora.* 1. *Muscidae.* Av O. Ringdahl. 1954–56.
46. *Coleoptera Lamellicornia.* Fam. *Scarabeidae.* Av B. O. Landin, 1957.

Timmermann, G. *Studien zu einer vergleichenden Parasitologie der Charadriformes oder Regenpfeifervogel.* 1. *Mallophaga.* 8vo. Jena: Gustav Fischer, 1957. [*Parasitologische Schriftenreihe* 8.]

Weaver, N. *How to draw insects.* 8vo. London: Studio Publ., 1958.

Werner, K. *Die Larvalsystematik einiger Kleinschmetterlingsfamilien.* 8vo Berlin: Akad. Verlag, 1958. [*Abh. Larvalsystematik Insekten* 2.]

In addition, separates have been presented by the American Entomological Society; Professor D. S. Bertram; Dr. D. J. Lewis; Mr. C. N. Smithers; Dr. J. D. Carthy; Dr. J. E. Treherne; Mr. J. A. Whellan; Dr. H. B. D. Kettlewell; Entomology Department, Rothamsted Experimental Station; Dr. T. A. M. Nash; United States Department of Agriculture and Mr. P. S. B. Digby.

PRINTED BY ADLARD AND SON, LIMITED, BARTHOLOMEW PRESS, DORKING.